G|SPEED™ Q

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G-Technology
by Hitachi

G|SPEED™ Q

IMPORTANT SAFEGUARDS

CAUTION	
RISK OF ELECTRIC SHOCK DO NOT OPEN	⚡ The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product enclosure and may be of significant risk of electrical shock to persons. ⚠ The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating maintenance (servicing) instructions literature accompanying the appliance.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PART'S INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE APPLIANCE TO RAIN OR MOISTURE.

1. READ INSTRUCTIONS
All the safety and operating instructions should be read before the unit is operated.

2. RETAIN INSTRUCTIONS
The safety and operating instructions should be retained for future reference.

3. HEED WARNINGS
All Warnings on the unit and in the operating instructions should be adhered to.

4. FOLLOW INSTRUCTIONS
All operating and use instructions should be followed.

5. ATTACHMENTS
Do not use attachments no recommended by the unit's manufacture as they may cause hazards.

6. WATER AND MOISTURE
Do not use this unit near water–for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.

7. ACCESSORIES
Do not place this unit on an unstable cart, stand, tripod, bracket or table. The unit may fall, causing serious injury and serious damage to the unit.

8. VENTILATION
Openings in the front and back of the unit are provided for ventilation to ensure reliable operation and to protect it from overheating. These openings must not be blocked or covered. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided.

9. POWER SOURCES
This unit should be operated only from the type of power source indicated on the rating label. If you are not sure of the type of power supply in your facility, consult your local dealer or power company.

10. GROUNDING AND POLARIZATION
This equipment is supplied with a power cord with a US style 3-wire grounding type plug at one end and a 3-wire IEC standard connector at the other. The 3-wire grounding type plug will fit into a US style grounding type power outlet and the IEC connector is intended to plug into the G-Tech unit. The 3-wire grounding type plug is a safety feature. If you are unable to insert the plug into the outlet, do not force it. Contact your electrician to replace the obsolete outlet. DO NOT DEFEAT THE SAFETY PURPOSE OF THE GROUNDING TYPE PLUG. For use in Foreign Countries, contact your local G-Tech dealer or representative to obtain a power cord with a locally compatible 3-wire grounding plug on one end and a 3-wire IEC standard connector to the other.

11. POWER CORD PROTECTION
Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles and the point where they exit the unit.

12. SERVICING
Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltages or tother hazards (see Caution Symbol at rear of power supply chassis). Refer all servicing to qualified service personnel.

G SPEED™ Q

Introduction

Thank you for purchasing G-SPEED™ Q from G-Technology™, G-SPEED Q hard drives from G-Technology are the ideal storage solutions for content creation professionals.

With all the power and the speed of G-SPEED and an internal RAID controller that sports a quad interface, G-Technology's new four-bay G-SPEED Q delivers solid, affordable RAID storage for both Mac users and creative professionals. G-SPEED Q offers outstanding performance, high storage capacity (up to 8 TB per unit) and optional fail-safe operation at a low cost per gigabyte. Unlike single drive systems, if a failure occurs your data is still safe and accessible. G-SPEED Q is also a fast data array, ideal for HDTV video production with formats such as multi-stream SD, Uncompressed HD and ProRes™ formats. With G-SPEED Q, your footage is always safely backed up. It works perfectly with demanding content creation applications, such as those found in Apple Final Cut Studio™.

With its built-in RAID controller, the G-SPEED Q is not tied to a single workstation and can be easily transported and used on a laptop or desktop in the edit bay or on the road. With its uniquely designed all aluminum enclosure, the compact and whisper quiet G-SPEED Q features four hot-swappable Hitachi Ultrastar 7200 RPM 3Gbit SATA hard drives, and can be configured in RAID 0 or RAID 5. Inside is a heavy duty power supply and a removable cooling fan to ensure long life and reliable operation.

G-SPEED Q's quad interface features 3Gbit eSATA, FireWire™ 800, FireWire 400 (via supplied cable) and USB 2.0.

NOTE: G-SPEED Q is formatted for Mac OS X and will mount on the desktop right out of the box. For details on reinitializing the G-SPEED Q, using the G-SPEED Q on Windows, or for using the G-SPEED Q for both Windows and Mac, click here.

IMPORTANT: The G-SPEED Q has been set up at the factory in RAID 5 mode. To change the G-SPEED Q to RAID 0 operation, Refer to the section entitled: "Changing the RAID Level" if you wish to change the mode of operation.

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G|SPEED™ Q

Safety

The disk drives and components contained in your G-SPEED Q are delicate electronic instruments and are susceptible to damage due to excessive physical shock. Place the unit in a vented area away from moisture or liquids.

Please handle the unit with care. Do not open the case. Doing so will void the warranty. *If the product is returned with damage caused by improper handling, the warranty will be void and liability will rest with the user.*

System Requirements

• Mac OS X 10.3 or higher
• Windows XP /Vista/ Windows 7

What's in the Box

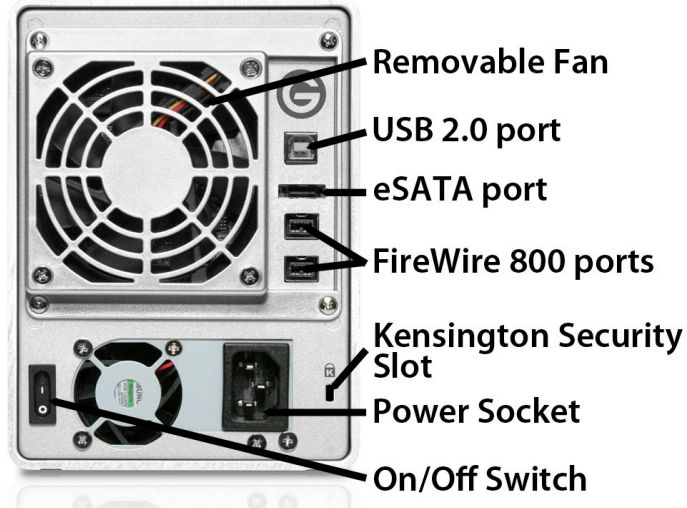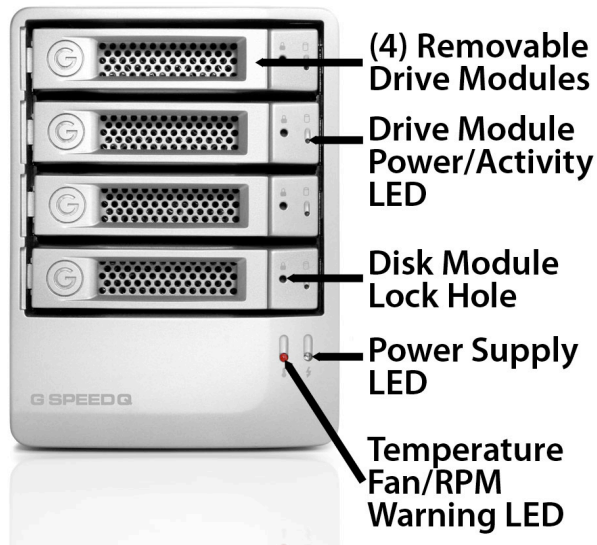Take a moment to ensure that the following items are included in the box.

G-SPEED Q
• G-SPEED Q Storage Unit
• (4) Removable Disk Modules
• 1 meter eSATA cable
• 1 FW 800 cable
• 1 FW 400 to 800 cable
• 1 USB 2.0 cable

If anything is missing, please call G-Technology at (310) 449-4599. For more details on this, click here.

G-SPEED Q Overview

Note the various features of the G-SPEED Q. G-SPEED Q is ideal for those that need a high speed RAID array, but use computer systems that may not have card slots for a RAID controller card. G-SPEED Q contains an internal RAID controller for higher data rates.

G SPEED™ Q

(4) Removable Drive Modules

Drive Module Power/Activity LED

Disk Module Lock Hole

Power Supply LED

Temperature Fan/RPM Warning LED

Removable Fan

USB 2.0 port

eSATA port

FireWire 800 ports

Kensington Security Slot

Power Socket

On/Off Switch

Attention Mac OS X Users

G-SPEED Q is set up at the factory for use with Mac OS X systems. If you are running Mac OS X, G-SPEED Q will mount on the OS X desktop right out of the box. If it becomes necessary to re-format G-SPEED Q for Mac OS X, go here.

Attention Windows Users

G-SPEED Q must be formatted for the Windows Operating System before using the G-SPEED Q.

For more information about using the G-SPEED Q for Windows XP, Windows Vista or Windows 7 use, please visit: http://www.g-technology/support/windows

Installing G-SPEED Q

G-SPEED Q attaches to your computer via an eSATA, USB 2.0 or FireWire 800 port. FireWire 400 connectivity is handled by a 9 to 6 pin cable (included). Choose the connection appropriate for your system and connect G-SPEED Q with the supplied cable. Connect the supplied power cord to the Power Supply and plug the other end into a surge protector or wall outlet. Turn on the power switch and the G-SPEED Q will mount on the desktop.

Supported RAID Levels

The G-SPEED Q is configured as a RAID 5 array at the factory. The unit also supports RAID 0 configuration. If you wish to change the RAID level, please refer to the section entitled: "Changing the G-Technology RAID Controller Mode".

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For an explanation of supported RAID levels, please refer to Appendix A, "RAID Levels Explained".

Note: Unlike the G-SPEED eS and G-SPEED eS Pro, you cannot include more than one unit in any RAID configuration.

Changing the RAID Level
G-SPEED Q ships in RAID 5 mode, if you need to change it to RAID 0, do the following steps:

1. Be sure all material you wish to save is backed up to a separate disk. The following operation will destroy all current material on the G-SPEED Q.

2. With the unit powered down, attach a USB 2.0 cable from the computer to the G-SPEED Q.

Note: You cannot change the RAID level when connected via eSATA or FireWire 800. You *must* be connected via USB 2.0 only.
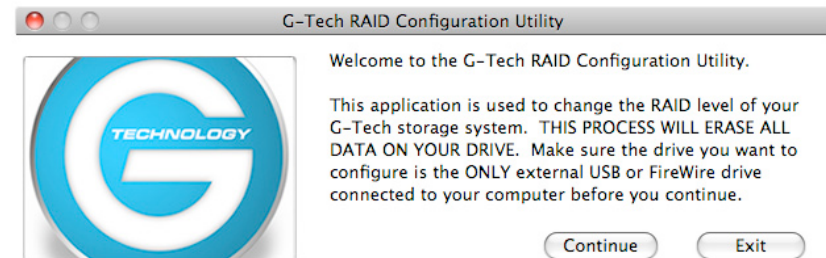
3. Download the G-Technology application, the G-Technology RAID Configuration Utility here. This tool will configure the G-SPEED Q appropriately.

4. Once downloaded, double click the disk image for the G-Technology RAID Configuration Utility

5. Open the G-Technology RAID Configuration Utility application by double clicking it within the Disk Image. You can also copy the Application to the Applications folder and run it from there, if you like.

Note: Currently, you must Option + Drag the application to the Applications folder to copy it there. It will not function correctly by merely dragging it there.
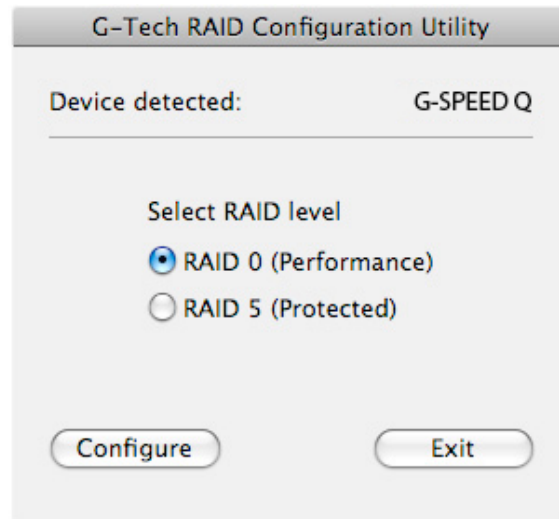
6. After you have opened the G-Technology RAID Configuration Utility, the following dialog box will launch:

7. Click the Continue button and the Utility will begin to search for available disks. A dialog box launches telling you this.
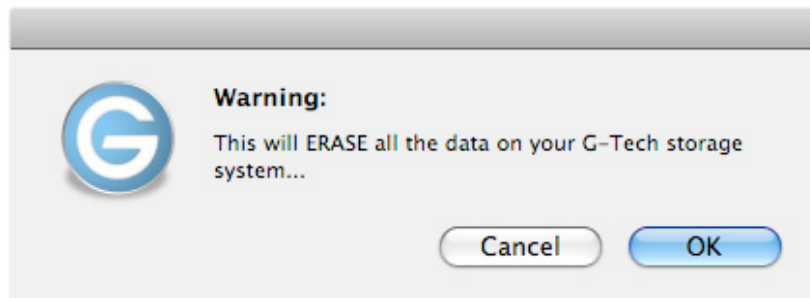

8. After the G-Technology RAID Configuration Utility has located the G-SPEED Q, the following dialog box will launch:
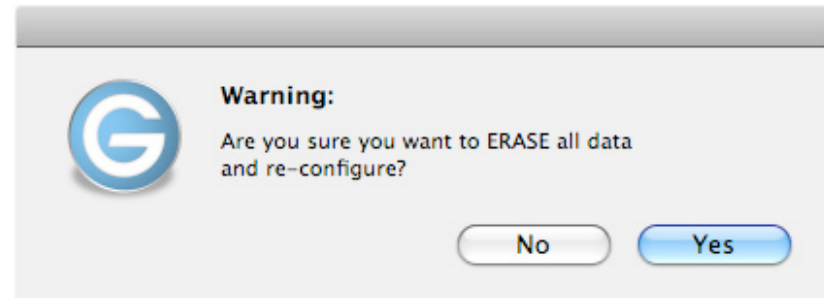
9. Select the RAID 0 radio button to change the RAID level from RAID 5. Select RAID 5 if you wish the G-SPEED Q to be changed to RAID 0. Click the Configure button.
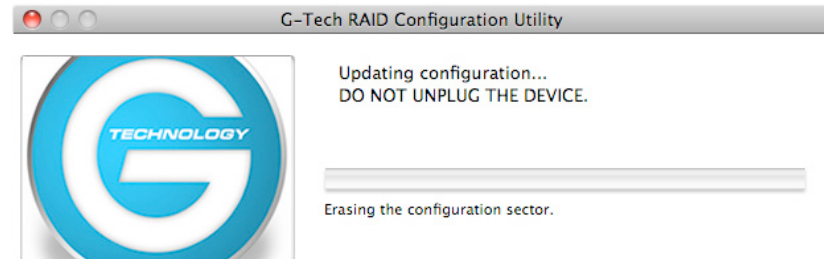
10. A dialog box will launch to warn you that all data will be erased by completing this function. Click OK.
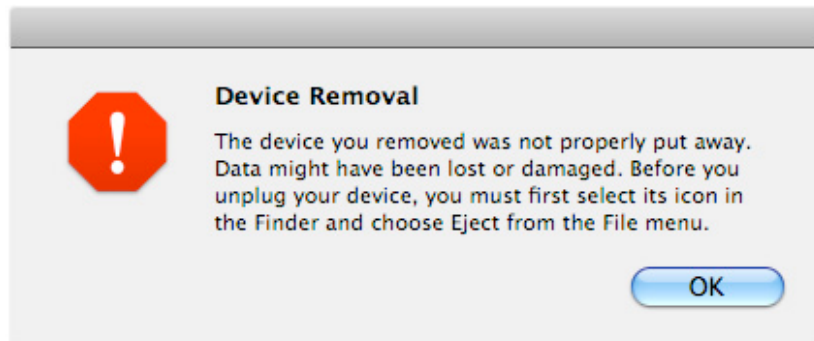

11. Another dialog box will remind you to backup files you do not want to permanently erase. Click Yes only after you are *sure* your files are backed up.
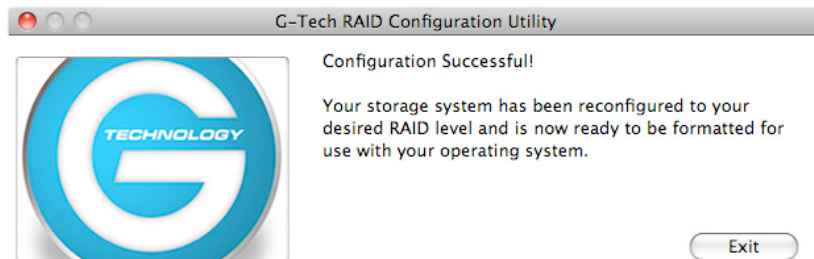

12. After you have clicked Yes, a new dialog box will appear reminding you not to unplug any cables as the G-SPEED Q is being reinitialized.

13. After the configuration is complete, a dialog box will launch warns you that a Device was not removed properly. Don't be concerned about this, just click OK.
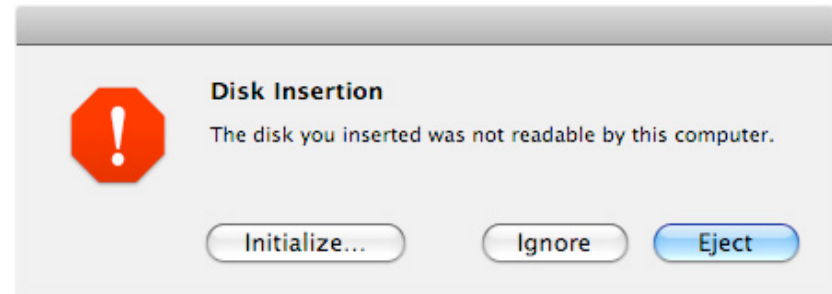
Device Removal

The device you removed was not properly put away. Data might have been lost or damaged. Before you unplug your device, you must first select its icon in the Finder and choose Eject from the File menu.

OK

Disk Insertion

The disk you inserted was not readable by this computer.

Initialize...   Ignore   Eject

16. After Disk Utility is launched, click on the Partition button. Under Volume Scheme, choose 1 Partition.

14. A dialog box will then launch indicating that the RAID configuration is complete. Click the Exit button.

G-Tech RAID Configuration Utility

Configuration Successful!

Your storage system has been reconfigured to your desired RAID level and is now ready to be formatted for use with your operating system.
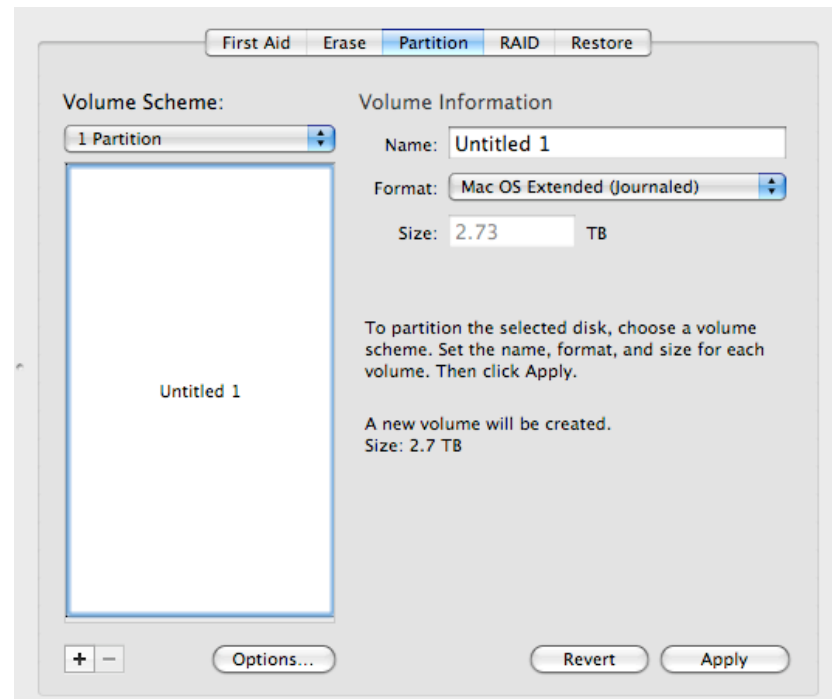
Exit

15. A Disk Insertion warning dialog appears, warning you that the disk is not readable by the computer. It's OK because you still must create a partition for the RAID in Apple Disk Utility. Click the Initialize button to launch Disk Utility.
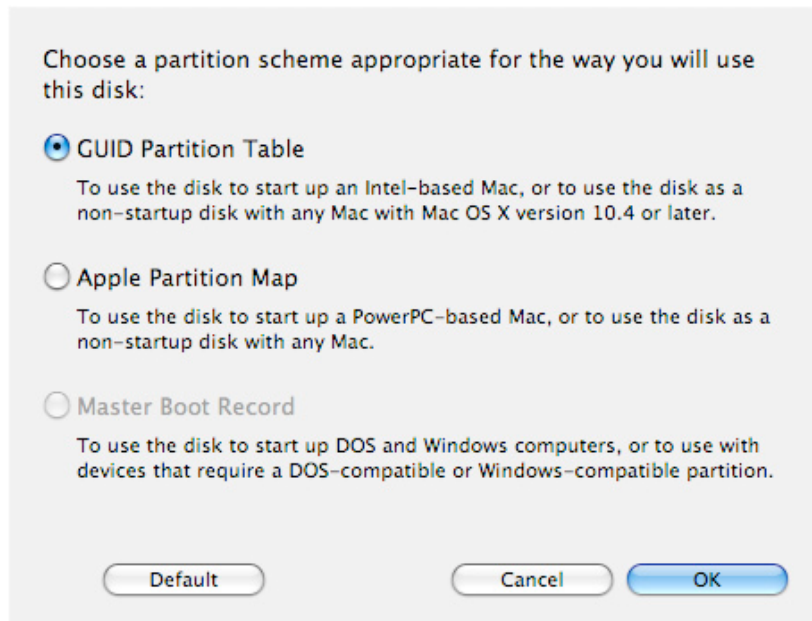
Note: If the Disk Insertion dialog box does not launch, you must open Disk Utility on your own. After Disk Utility is open, you can continue on with the steps for partitioning.

First Aid   Erase   Partition   RAID   Restore

Volume Scheme:

1 Partition

Untitled 1

Volume Information

Name: Untitled 1

Format: Mac OS Extended (Journaled)

Size: 2.73   TB

To partition the selected disk, choose a volume scheme. Set the name, format, and size for each volume. Then click Apply.

A new volume will be created.
Size: 2.7 TB

+ −   Options...   Revert   Apply

17. Click the Options button to choose the proper partition scheme. Click the radio button for GUID Partition Table, then click OK.

18. Rename the Volume: G-SPEED Q or any other name you wish in the Name field.

19. Click the Apply button.

20. The Partition Disk dialog launches, warning you that all data will be erased. Click the Partition button.

21. Apple Disk Utility begins the formatting process. Upon completion, the G-SPEED Q is fully functional. However, you will want to restore the original G-SPEED Q icon.

Restoring the G-SPEED Q Icon

You will see the standard icon for USB after completing the formatting process. If you desire to return the standard G-SPEED Q icon, complete the following steps.

Restore the icon by doing the following:

1. Go to the G-Technology website and download the "icon package". Click here to download the package.

2. Once downloaded, select the icon for the G-SPEED Q in the G-Technology Icons disk.

G-SPEED Q

G-SPEED FC
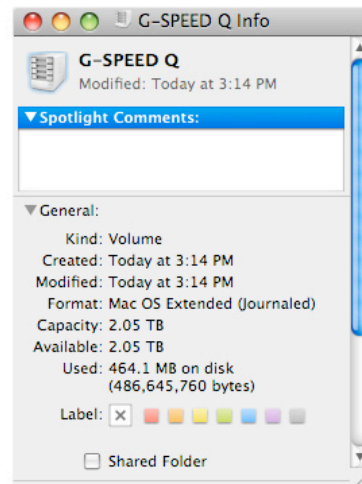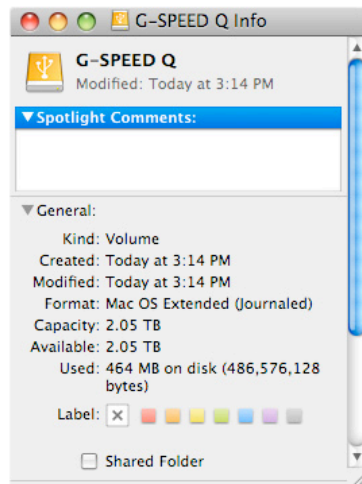

G-SPEED FC XL16

G-SPEED FC XL12

3. Press Command + C to copy the icon.

4. Select the G-SPEED Q USB icon on the Desktop and press Command + I.

5. Select the USB Icon in the "Get Info" window (left)

6. Press Command + V to paste the icon into the Get Info window (right).

The icon for your G-SPEED Q has now been restored.

You can now close the Get Info window.

After reinitializing the drive and restoring your icon, your G-SPEED Q is ready for use.

G-SPEED Q

G-SPEED Q Alarms
The G-SPEED Q is equipped with visual alarms to alert you to any possible malfunction. There is a red LED on the bottom right of the unit and amber LEDs on each drive module.

Red Warning LED

•If a red LED is lit, there is a failure of one of the internal components.

•If an amber LED is lit, there is a drive failure for that particular module.

If you see the RED warning LED on the front of G-SPEED Q, stop using G-SPEED Q, contact G-Technology Tech Support.

If you see an amber LED, see the following section, "What To Do In The Event Of A Disk Drive Failure". You will need to replace a drive module.

Note: Although there is a switch for the Audible Alarm on the rear of the unit, it is not functional. G-SPEED Q only supports

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visual alarms.

What To Do In The Event Of A Disk Drive Failure
The internal components of the G-SPEED Q continually monitor the health of each of the disk drives. In the event of a disk failure, a visual alarm will appear.

NOTE: If G-SPEED Q was configured in a protected RAID mode (RAID 5), a drive failure will not result in data loss. However, the array is now in an unprotected state and the failed drive should be replaced as soon as possible to avoid data loss. If G-SPEED Q is configured as RAID 0, there will be data loss.

Follow the steps below to identify and replace a failed drive.

1. Locate the malfunctioning drive by visually inspecting the drive modules. If an amber LED is lit for a drive, it is the one that has failed.

2. Remove the failed drive by inserting the provided key in to the lock hole and gently sliding the drive module out of the enclosure.

WARNING: REMOVING THE WRONG DRIVE WILL RESULT IN THE LOSS OF THE ARRAY AND ALL OF THE CONTENT STORED ON G-SPEED Q.

4. Replace the failed drive with a new disk module (new drive modules can be purchased here) and secure it in place. Once

the drive has spun up to speed, the drive will indicate that the array is rebuilding. The rebuild time is approximately 2 hours per TB.

Note: You can continue using the G-SPEED Q even while the volume is being rebuilt, albeit at slower data rates.

5. Once the rebuild is complete, G-SPEED Q is back to Normal and protecting your valuable data once again.

Note: It is good practice to keep at least one spare drive module on hand in case of a disk failure. This way, you can rebuild your array in hours rather than wait days for a new one to ship to you.

Disconnecting G-SPEED Q
A great feature of G-SPEED Q is its ability to be connected and disconnected while your computer is running. To prevent failures and/or data loss it is important to follow the steps below when disconnecting or "unmounting" the G-SPEED Q from your computer.

1. Before powering down and disconnecting G-SPEED Q, you must unmount the system by simply dragging the G-SPEED Q icon to the trash located in the dock.

2. It is now safe to power off and remove G-SPEED Q from your system.

Note: you can also mount and unmount the G-SPEED Q in Apple Disk Utility.

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G|SPEED™ Q

Optimizing Data Transfer Rates

G-SPEED Q can be connected to any Mac or PC equipped with an eSATA, FireWire 400, FireWire 800 or USB 2.0 port.

For best performance, G-SPEED Q should be connected via eSATA*.

*Data rates will be even higher if you connect to an eSATA RAID Controller Card rather than a standard eSATA PCIe card or eSATA ExpressCard adapter.

Technical Support

G-Technology appreciates and values its customers, striving to give you the finest service and support. If you encounter any difficulties while installing the G-SPEED Q, or if the G-SPEED Q needs maintenance, please contact G-Technology Technical Support via one of the following ways:

Telephone: (310) 449-4599
Fax: (310) 449-4670
E-mail: support@g-technology.com
Internet: http://www.g-technology.com

When contacting Technical Support, make sure to be in front of your computer and have the following information readily available:

• Your G-SPEED Q serial number (on bottom of unit)
• Operating system and version
• Computer brand and model
• Amount of memory installed

• Other devices attached to your computer

Thank you for purchasing G-SPEED Q. If you have any comments or questions about this manual or the product, please call (310) 449-4599, or send an email to support@g-technology.com

Limited Warranty

Hitachi Global Storage Technologies, ("Hitachi GST") including G-Technology by Hitachi Limited Warranty for External Hard Disk Drives

What does this limited warranty cover?
This Limited Warranty applies to new Hitachi GST external storage products purchased from an authorized Hitachi GST dealer by the original purchase for normal use and not for resale. Hitachi GST warrants that a covered product is free from defects in materials and workmanship, with the exceptions stated below.

How long does limited warranty coverage last?
This limited warranty lasts for 1 year, 2 years, 3 years or 5 years, or a fixed period from date of purchase, depending on when and where it was originally purchased. To determine the warranty specifically for your product, visit www.g-technology.com . A valid proof of purchase may be required to prove eligibility. If you do not have a valid proof of purchase, the limited warranty period will be measured from the date of sale from Hitachi GST to the authorized distributor.

What does this limited warranty not cover?

The limited warranty does not cover damage resulting from commercial use, misuse, accident, modification or alteration to hardware or software, tampering, unsuitable physical or operating environment beyond product specifications, improper maintenance, or failure caused by a product for which Hitachi GST is not responsible. There is no warranty of uninterrupted or error-free operation. There is no warranty for loss of data—you must regularly back up the data stored on your product to a separate storage product. There is no warranty for product with removed or altered identification labels. HITACHI GST DOES NOT PROVIDE ANY OTHER WARRANTIES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME JURISDICTIONS DO NOT ALLOW THE LIMITATION OF IMPLIED WARRANTIES, SO THIS LIMITATION MAY NOT APPLY TO YOU. Hitachi GST is not responsible for returning to you product which is not covered by this limited warranty.

What must you do?

If you are having trouble with a product, before seeking limited warranty service, first follow the troubleshooting procedures that Hitachi GST or your reseller provides.

To obtain limited warranty service, you must first obtain a Return Materials Authorization (RMA) and ship-to address by contacting G-Technology by Hitachi at http://www.g-technology.com/support Please follow the instructions found on the website. You must return the covered hard disk drive using approved packaging to our logistics center. You must pay any associated transportation charges, duties and insurance in shipping the drive to our logistics center. You should remove all personal information from the product prior to its return.

What will Hitachi GST do?

Hitachi GST will repair or replace covered defective product and ship you repaired or replaced product, transportation prepaid. You receive title to the repaired or replaced product at delivery to carrier at Hitachi GST shipping point. You are responsible for importation of the repaired or replaced product, if applicable. These limited warranty terms apply to the repaired or replaced product, except the limited warranty period is for the greater of the remainder of the original limited warranty period for the returned product or 90 days.

How is our liability limited?

HITACHI GST AND ITS AFFILIATES, SUPPLIERS, DISTRIBUTORS, AND RESELLERS ARE NOT LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN BODILY INJURY INCLUDING DEATH AND TANGIBLE PERSONAL PROPERTY; 2) LOSS OF, OR DAMAGE TO, YOUR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF INFORMED OF THE POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW LIMITATION OF LIABILITY, INCIDENTAL DAMAGES, OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

How do local laws apply?

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM

G SPEED™ Q

JURISDICTION TO JURISDICTION.

G-Technology, a division of Hitachi Global Storage Technologies
Tel: (310) 449-4599
Fax: (310) 449-4670
support@g-technology.com

G-Technology
by Hitachi

One gigabyte (GB) is equal to one billion bytes and one terabyte (TB) equals 1,000 GB (one trillion bytes). Accessible capacity will vary from the stated capacity due to formatting and partitioning of the hard drive, the computer's operating system, and other factors" For G-Technology by Hitachi products less than 1TB: "One gigabyte (GB) is equal to one billion bytes when referring to hard drive capacity. Accessible capacity will vary depending on the operating environment and formatting.

Appendix A: RAID Levels Explained
The following chart will help you understand the difference between different RAID levels available for G-SPEED Q.

RAID Level	Description	Advantage	Disadvantage	Ideal For
0	Disk striping	Offers the highest performance and a useable storage capacity of 100% of total available storage capacity	No fault tolerance - failure of one drive in the array results in complete data loss	Content creation applications requiring highest storage capacity and best performance.
5	Disk striping with distributed parity	High read performance, medium write performance with data protection in case of a drive failure.	Useable storage capacity equals total capacity of all drives in the array less the capacity of one drive. For example, a 4x 1TB RAID 5 yields a useable capacity of 3 TB. Disk failure results in drop in performance	Content creation applications requiring data protection

G SPEED™ Q

APPENDIX B: Notes

It is recommended not to exceed the standard eSATA cable length of 1 meter (3 feet).